



memo

To: George Tagnipes, et al., CPUC
From: Mimi Goldberg, KEMA
Kathleen Gaffney, KEMA
Kevin Price, KEMA
Date: January 13, 2011
Subject: Addendum to "2006-2008 Upstream Lighting Program CFLs Installed in 2009, for Inclusion in 2009 ERT" for Residential CFLs

Overview

This document serves as an addendum to the memorandum "2006-2008 Upstream Lighting Program CFLs Installed in 2009, for Inclusion in 2009 ERT", sent to George Tagnipes, et al., CPUC on December 13, 2010. The purpose for the addendum is to document a change in methodology for calculating the quantity of 2006-2008 CFLs installed in 2009, as well as a subsequent change in final results. The revised methodology takes into account factors that the initial methodology did not (because the prior method was concerned with 2006-2008 installations only, and showed 2009 results for illustration purposes).

Quantity of 2006-2008 CFLs Installed in 2009, by IOU

Method

The method used to determine the quantity of 2006-2008 CFLs that were installed in subsequent years is similar to the method presented in Section 8.4 of the 06-08 ULP Report. However, some different assumptions and additional steps were needed when applying this modeling method to differentiate among 2006-2008 CFLs and 2009 CFLs, of CFLs installed in 2009.

1. **Non-program sales.** For the 2006-08 analysis, our model assumed a certain ratio of all CFL sales to program CFLs, based on studies from 2008. The ratio of all CFL sales to IOU-discounted CFL sales was 1.34 for the IOU territories as a whole, and this factor was applied to our program sales data to determine overall CFL sales. For 2009, the program shipments were much smaller than in the preceding years. As a result it did not make sense to assume that the ratio of total to program sales was the same as for 2006-08. Instead, we assumed that the absolute level of non-program bulbs sold was the same in 2009 as in 2008. This assumption was included in the analysis provided in the 2006-08 evaluation report.
2. **Separating 2009 from 2006-08 shipments in total 2009 purchases.** For the 2006-08 analysis, we tracked installations by purchase year but not by shipment year. Any discounted bulb purchased in 2006-08 was assumed to be a 2006-08 program bulb. For the bulbs

purchased in 2009, we needed to separate purchases of 2009 shipments from purchases of bulbs remaining on the shelf from 2008. The numbers remaining from 2008 were part of an interim calculation in the original analysis. For the 2009 analysis we pulled them out explicitly.

- 3. Separating 2009 from 2006-08 shipments in 2009 installations.** The 2006-08 analysis assumes that bulbs are installed in the order purchased, so that the earliest purchases remaining in storage are the next ones installed. We retained this assumption for the 2009 analysis. However, we did not assume that bulbs purchased in the current year from prior year “leftover” shipments are installed before those purchased from current-year shipments. (As noted, this was not an issue for the 2006-08 analysis.) Instead, we assumed that the 2009 installation rate is the same for all 2009 purchases, whether they were from leftover 2008 shipments or from 2009 shipments. This means that the percent of 1st-year installations that were leftover shipments is the same as the percent of 2009 purchases that were leftover shipments.

This assumption relies on a key assumption that we have maintained throughout our modeling: consumers cannot differentiate among 2008 and 2009 IOU-discounted CFLs (or any other consecutive years). While there may be slight variations in packaging, branding, or the products themselves, we see no reason to believe that a consumer would necessarily show preference based on the year the IOU provided the discount.

- 4. 2006-08 purchase flows.** The 2006-08 analysis developed estimates of total bulbs purchased and of program bulbs purchased, installed, added to storage, and replacing failed and broken bulbs in each year. The analysis further broke these quantities into numbers installed and stored each year by year of acquisition, for both all bulbs and for discounted bulbs only. For this breakdown, the intended principle of oldest bulbs being installed first did not get fully implemented. The 2006-08 report (Table 71, pg. 124) indicated some bulbs from a prior year still being in storage while newer bulbs were installed. For the 2009 analysis this sequence of installations was corrected. The correction made only a very small difference to the cumulative number installed by the end of 2008, the key installation result for the 2006-08 program. However, the correction was necessary to develop reasonable estimates for 2009.
- 5. Extending the analysis.** With the revisions indicated above, the methodology essentially extended the 2006-08 analysis to model all years 2006-2009. We then isolated the 2009 purchases that were leftover from 2008 shipments, as indicated at point 3 above.

Results

The results, by IOU, are presented below. The number of 2006-2008 CFLs installed in 2009 is highlighted in yellow in each of the tables. It is important to note that higher quantities of 2006-2008 installations in 2009 is directly related to the number that were reportedly *not* installed by the end of 2008. Variation among IOUs in the number of CFLs installed in 2009 is to be expected, as variations in storage, remaining potential, available CFLs, and 2009 program CFLs affect the rate at which 2006-2008 CFLs become installed.

For all IOUs, the large majority of bulbs installed in 2009 are taken from storage. This is based on the principle that stored bulbs are exhausted (except for the small fraction that will never be installed) before newly purchased bulbs are installed. Because the program volumes and corresponding total sales were much higher in 2008 than in 2009, the majority of 2009 installations can be provided by stored bulbs. Thus, the first-year installation rates are low for 2009. Following the same logic and analysis as for 2006-2008, almost all the 2009 purchases are likely to be installed within the next one to two years. These will be credited in the ERT for the years these installations occur.

As shown for Pacific Gas and Electric, approximately 15.2 million 2006-2008 CFLs were installed in 2009. This substantial number of CFL installations is the result of installations from the 20 million CFLs remaining in storage at the end of 2008, as well as purchases of 2008 CFLs in 2009 (due to only an 87% sell-through rate by the end of 2008).

PG&E CFLs Installed in 2009 (millions)	IOU 2006-09 program bulbs		
	All 06-09 pgm bulbs	06-08 pgm bulbs only	2009 pgm bulbs only
CFLs Shipped (Total)	59.0	52.9	6.0
Acquired in 2009	8.1	3.2	4.9
Installed in 2009 from storage	14.6	14.6	0.0
Installed in 2009 from 2009 acquisitions	1.5	0.6	0.9
Installed in 2009 from storage & 09 acquisitions	16.1	15.2	0.9

As shown for Southern California Edison, approximately 7.6 million 2006-2008 CFLs were installed in 2009. This the result of installations from the 9.5 million 2006-2008 CFLs in storage at the end of 2008, and stores in SCE territory selling through only 88% of their CFLs by the end of 2008 (12% of 2008 CFLs remained on the shelves).

SCE CFLs Installed in 2009 (millions)	IOU 2006-09 program bulbs		
	All 06-09 pgm bulbs	06-08 pgm bulbs only	2009 pgm bulbs only
CFLs Shipped (Total)	39.3	35.3	4.0
Acquired in 2009	4.8	1.6	3.2
Installed in 2009 from storage	7.1	7.1	0.0
Installed in 2009 from 2009 acquisitions	1.5	0.5	1.0
Installed in 2009 from storage & 09 acquisitions	8.6	7.6	1.0

As shown San Diego Gas and Electric, approximately 2.2 million 2006-2008 CFLs were installed in 2009. These installations include many of the 3 million 2006-2008 CFLs which remained in storage at the end of 2008, as well as the 12% of 2008 CFLs that remained on retailer shelves at the end of 2008.

SDG&E CFLs Installed in 2009 (millions)	IOU 2006-09 program bulbs		
	All 06-09 pgm bulbs	06-08 pgm bulbs only	2009 pgm bulbs only
CFLs Shipped (Total)	9.3	7.6	1.7
Acquired in 2009	1.6	0.3	1.3
Installed in 2009 from storage	2.2	2.2	0.0
Installed in 2009 from 2009 acquisitions	0.0	0.0	0.0
Installed in 2009 from storage & 09 acquisitions	2.2	2.2	0.0



memo

To: George Tagnipes, et al., CPUC
From: Mimi Goldberg, KEMA
Kathleen Gaffney, KEMA
Kevin Price, KEMA
Subject: 2006-2008 Upstream Lighting Program CFLs Installed in 2009, for Inclusion in 2009 ERT

Overview

In response to a comment posed during the Energy Division presentation of the 2009 Upstream Lighting ERT results, the ED has determined to update the 2009 ERT to include savings from CFLs rebated during the 2006-2008 Upstream Lighting Program that were installed in 2009. The ED has asked KEMA to provide a method for calculating these savings.

For Residential installations, the method and results for determining the quantity of CFLs that fall into this category are reported in the Final Evaluation Report: Upstream Lighting Program, Volume 1¹ (hereafter referenced as “the 06-08 ULP Report”). The results of this analysis do not indicate which CFLs in particular were installed in 2009. We therefore propose to use program averages for ex-post savings parameters to determine program-level savings. Furthermore, since the cost associated with rebating these CFLs has already been accounted for in the 2006-2008 ERT, there is no additional program cost associated with these CFLs.

The analysis of Nonresidential installations for the 2006-08 evaluation did not include an accounting model of purchases and installations in each year like that used for the residential analysis. Nonresidential purchases are about 5% of total program shipments. Nonresidential applications have higher annual hours of use and therefore shorter EUL (measured in years). Due to the shorter EUL and the lack of directly transferable analysis, it is our recommendation that the IOUs receive full credit in the 2009 ERT for the Nonresidential CFLs that were deemed not installed through 2008. The 2009 ERT should assume program average Nonresidential UES values for Nonresidential CFLs for each IOU.

The remainder of this memo describes the residential methodology.

¹ KEMA, Inc., 2010.

Quantity of 2006-2008 CFLs Installed in 2009, by IOU

Method

The method used to determine the quantity of 2006-2008 CFLs that were installed in subsequent years is presented in Section 8.4 of the 06-08 ULP Report.

Results

The results, by IOU, are presented below in Tables 73 – 75, from the 06-08 ULP Report. The second row in each table contains the quantities of “New installation of all 06-08 program bulbs”. The cells highlighted in yellow show the quantities of 2006-2008 CFLs installed in 2009. These 2009 installations of 2006-08 program bulbs include both bulbs purchased during the 2006-08 program period but not installed until 2009, and bulbs shipped during the 2006-08 program period but not purchased or installed until 2009.

Table 1: Estimated Acquisitions and Installations by Year, PG&E

(million bulbs)	Installation Year				
	2006	2007	2008	2009	2010
New installations of current year acquisitions	3.1	9.9	13.8		
New installations of all 06-08 program bulbs	3.1	9.9	18.4	6.8	8.2
Program CFLs acquired	6.7	16.5	23.6		
1st year installation rate 06-08 CFLs	47%	60%	59%		
Cumulative program new installations	3.1	13.1	31.4	38.3	46.5
Cumulative program CFLs acquired	6.7	23.2	46.8	46.8	46.8
Cumulative installation rate 06-08 CFLs	47%	56%	67%	82%	99%
06-08 pgm bulbs in use	3.1	12.5	28.8	30.9	33.9
Surviving installation rate	47%	54%	62%		

Table 2: Estimated Acquisitions and Installations by Year, SCE

(million bulbs)	Installation Year				
	2006	2007	2008	2009	2010
New installations of current year acquisitions	3.0	8.7	7.2		
New installations of all 06-08 program bulbs	3.0	10.2	10.9	4.9	2.0
Program CFLs acquired	5.5	13.0	12.6		
1st year installation rate 06-08 CFLs	55%	67%	57%		
Cumulative program new installations	3.0	13.2	24.1	29.0	31.0
Cumulative program CFLs acquired	5.5	18.5	31.1	31.1	31.1
Cumulative installation rate 06-08 CFLs	55%	71%	77%	93%	100%
06-08 pgm bulbs in use	3.0	12.7	21.5	22.8	21.0
Surviving installation rate	55%	68%	69%		

Table 3: Estimated Acquisitions and Installations by Year, SDG&E

(million bulbs)	Installation Year				
	2006	2007	2008	2009	2010
New installations of current year acquisitions	0.3	1.9	1.3		
New installations of all 06-08 program bulbs	0.3	1.9	2.2	1.0	1.1
Program CFLs acquired	0.8	3.1	2.6		
1st year installation rate 06-08 CFLs	34%	62%	51%		
Cumulative program new installations	0.3	2.2	4.4	5.4	6.5
Cumulative program CFLs acquired	0.8	3.9	6.5	6.5	6.5
Cumulative installation rate 06-08 CFLs	34%	56%	67%	83%	99%
06-08 pgm bulbs in use	0.3	2.2	4.0	4.3	4.7
Surviving installation rate	34%	55%	61%		

Savings Parameters of 2006-2008 CFLs Installed in 2009, by IOU

The method for determining the quantities of 2006-2008 CFLs installed in 2009 did not differentiate among the various types of CFLs rebated by the program. Therefore, program average savings parameters will be used for the savings parameters of all CFLs included in this analysis. The residential program average ex-post kWh and kW are presented below in yellow, by IOU, in Table 26 (taken directly from the Report). The savings parameters in Table 26 are attributed to each CFL installed in 2009, thus allowing for a single row, per IOU, for inclusion into the 2009 ERT for 2006-2008 program CFLs.

Table 4: Ex-ante v. Ex-post Savings Parameters – Upstream Screw-in CFLs²

		PG&E		SCE		SDG&E	
		Nonresidential	Residential	Nonresidential	Residential	Nonresidential	Residential
EX-POST UES KWH/YR							
CFL	Globe	n/a	23.09	n/a	24.55	n/a	19.05
	Reflector	n/a	36.82	n/a	36.27	n/a	28.96
	Twister/A-lamp	n/a	32.73	n/a	33.15	n/a	26.77
	All CFLs	121.00	30.72	105.30	31.07	98.70	24.31
EX-POST UES PEAK KW							
CFL	Globe	n/a	0.0021	n/a	0.0023	n/a	0.0022
	Reflector	n/a	0.0034	n/a	0.0033	n/a	0.0034
	Twister/A-lamp	n/a	0.0030	n/a	0.0031	n/a	0.0031
	All CFLs	0.0196	0.0028	0.0161	0.0029	0.0163	0.0028

Cost of 2006-2008 CFLs Installed in 2009, by IOU

We believe that the incremental cost associated with 2006-2008 CFLs included in the 2009 ERT was absorbed as part of the 2006-2008 ERT. Therefore, no additional incremental cost should be included

² Revisions to the ex-post values shown in this table were submitted as part of the errata document posted on December 18, 2010.

Memorandum
December 13, 2010

when incorporating these CFLs into the 2009 ERT. However, should it be determined that the incremental cost of the CFLs purchased in 2006-2008 that were installed in 2009 were not included in the ERT, KEMA will use a program averaged incremental cost assumption.